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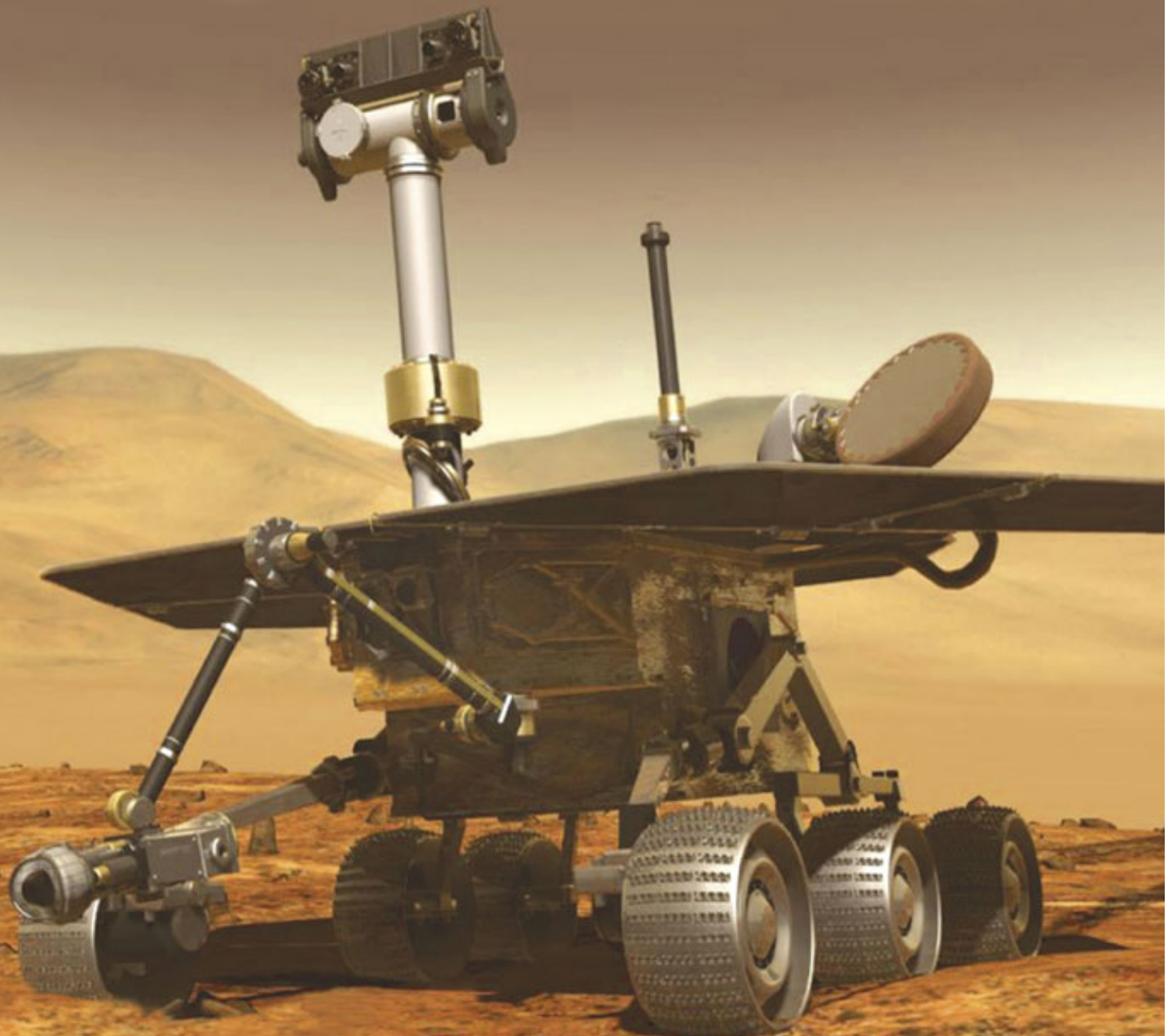
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HOUGHTON MIFFLIN

Vocabulary Readers

Journey to Mars

by Susan M. Bauer



Number of Words: 644

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Journey to Mars



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Strategy Focus

As you read, **monitor** your understanding.
Reread to **clarify** any parts you don't understand.



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BOSTON

Key Vocabulary

analysis close study

engineers people who design machines

interpreted explained the meaning of

maneuvers changes in a vehicle's
direction

monitoring keeping watch over

navigation planning and controlling
a craft's movements

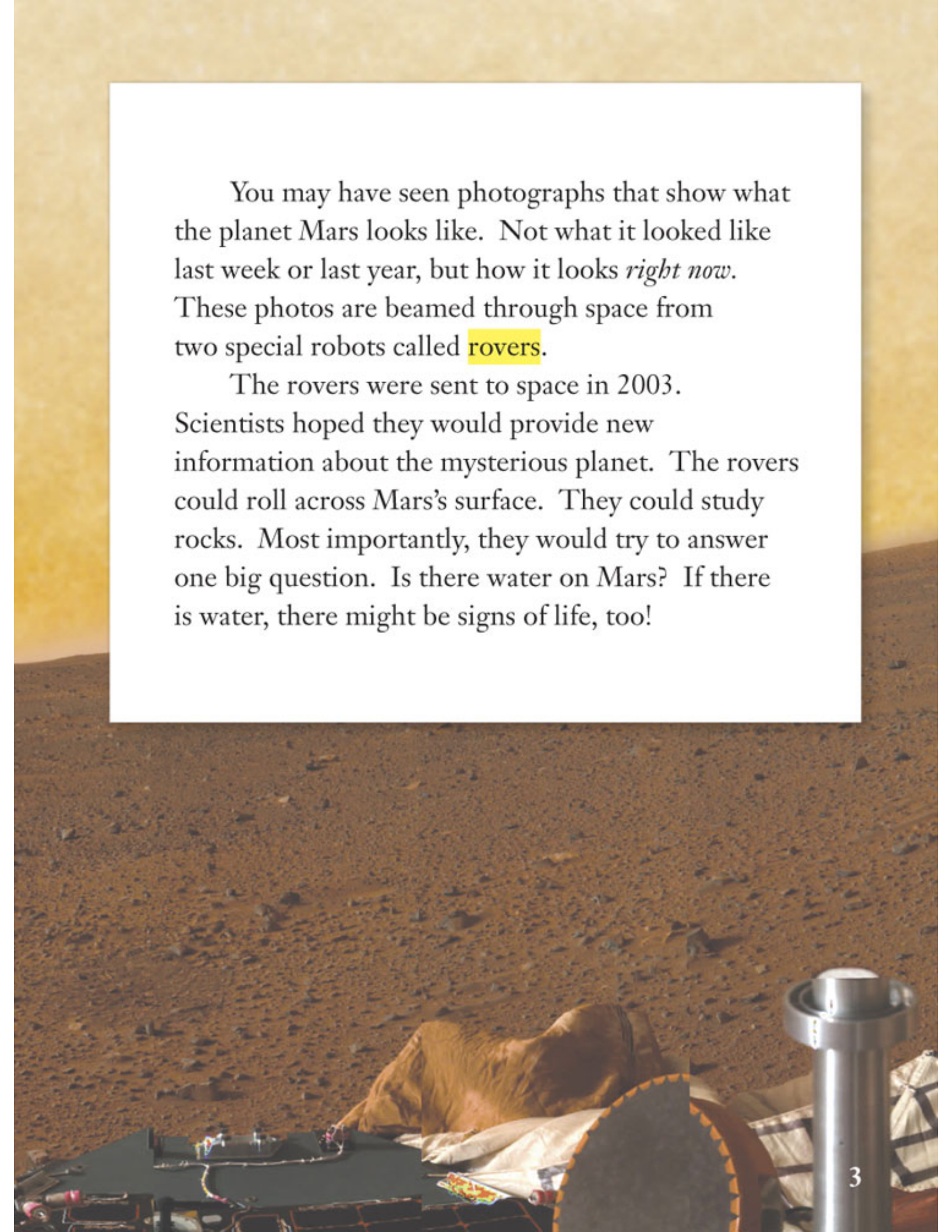
rover vehicle for exploring a planet

sensors devices that respond to changes
in the environment

stereoscopic seeing objects in three
dimensions

Word Teaser

What part of a Mars rover might be
very sensitive?

The background of the page is a photograph of the Martian surface. In the foreground, the top of a Mars rover is visible, showing its solar panels and various instruments. The ground is a reddish-brown, rocky terrain. In the distance, a hazy, orange-brown sky is visible. The entire scene is framed by a white rectangular box containing text.

You may have seen photographs that show what the planet Mars looks like. Not what it looked like last week or last year, but how it looks *right now*. These photos are beamed through space from two special robots called **rovers**.

The rovers were sent to space in 2003. Scientists hoped they would provide new information about the mysterious planet. The rovers could roll across Mars's surface. They could study rocks. Most importantly, they would try to answer one big question. Is there water on Mars? If there is water, there might be signs of life, too!

Scientists first sent a rover to Mars in 1977. The rover spent seven months traveling to Mars. When it finally landed on the planet, it began taking pictures.

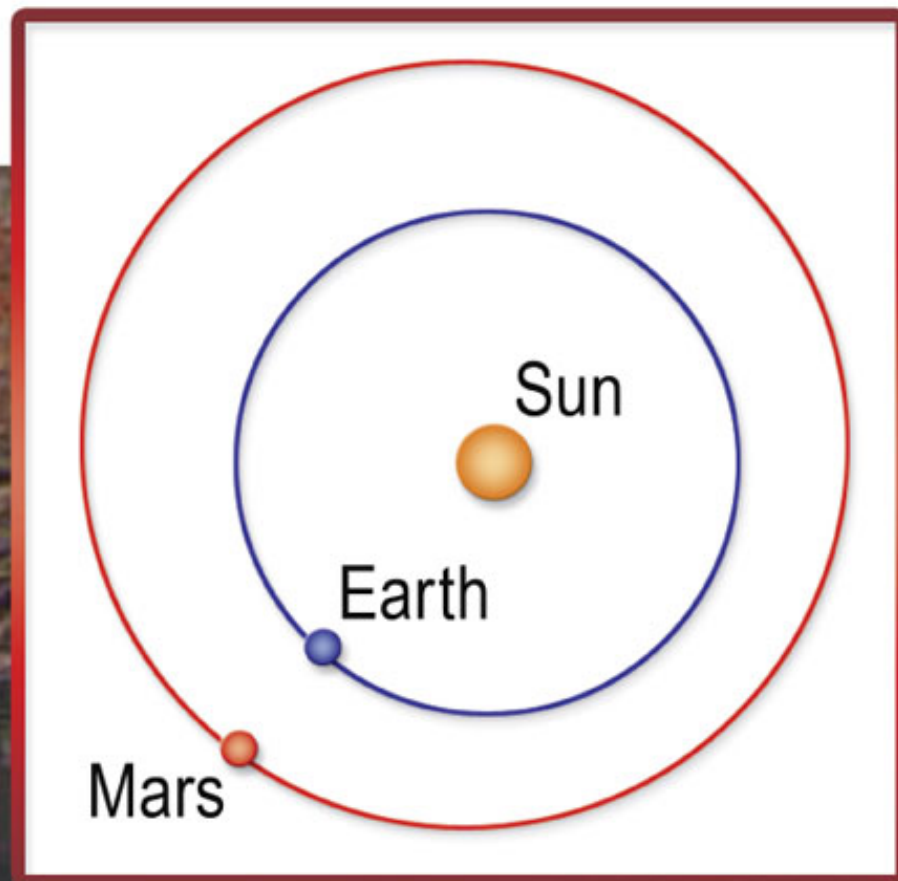
The rover had a camera with **stereoscopic** lenses. The lenses allowed it to see in three dimensions, just as people do.

The rover sent back amazing photographs. No one had ever seen images from Mars before.



In 1999, two more spacecraft left Earth and zoomed toward the Red Planet. But neither one made it all the way to Mars.

Then a group of scientists came up with a new plan for exploring Mars. They said 2003 would be the perfect time to send another spacecraft to the planet. That year, Earth and Mars would be closer to each other than they had been for 60,000 years.

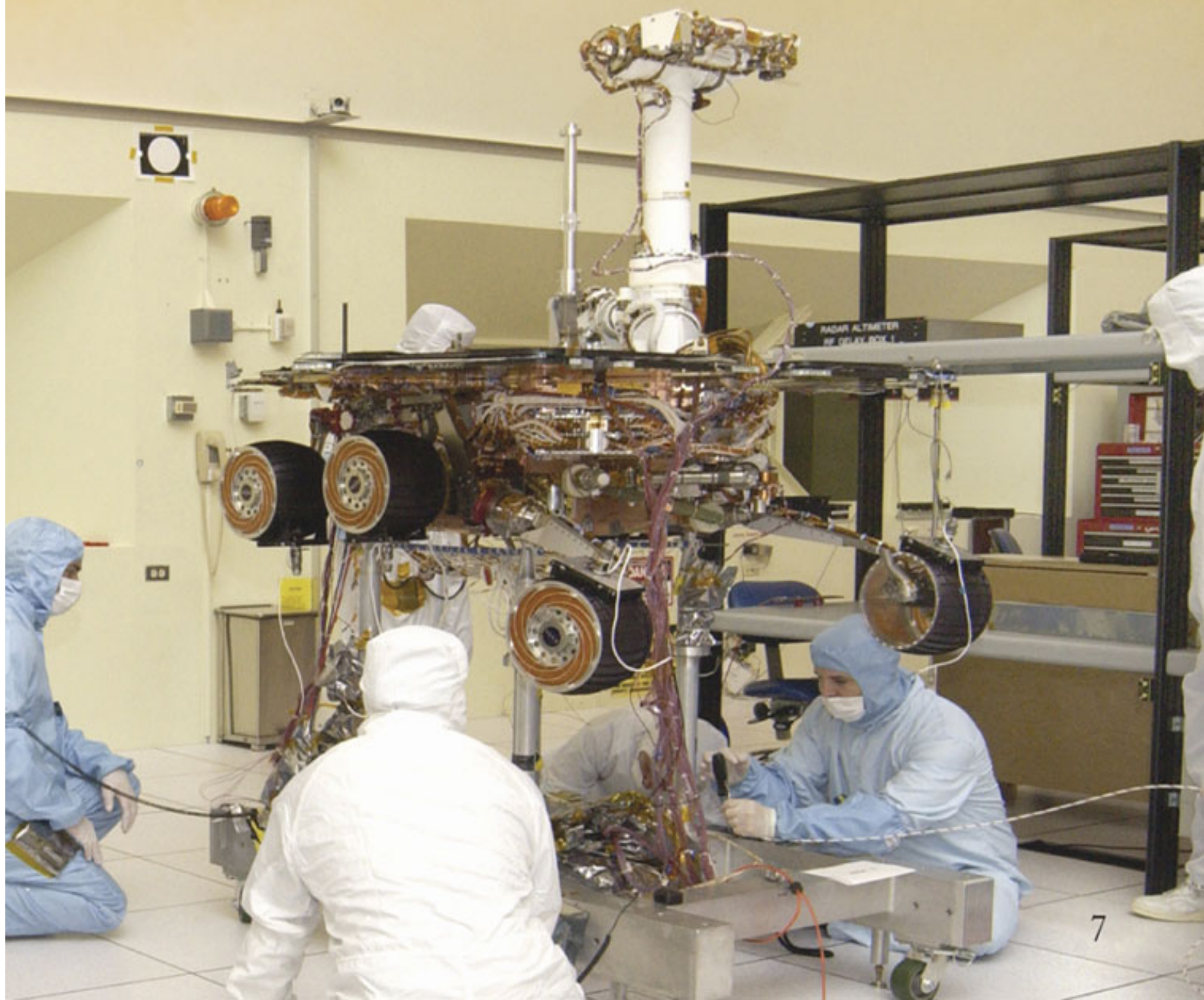


The National Aeronautics and Space Agency (NASA) thought this was a great plan. They decided to send *two* rovers to Mars in 2003.

Scientists had 36 months to get ready. It was not a lot of time. Two rovers meant they needed to work twice as hard and twice as fast. First, **engineers** had to build the rovers. Then they had to test them and retest them.



All along the way, problems slowed the team down. Every time they solved one problem, a new one popped up.



The scientists began running out of time. The team would have to fix some problems *after* the rovers were in space. Fortunately, they had equipment for **monitoring** the rovers during their trip.

On June 10, 2003, the spacecraft carrying the first rover was launched into space. The second one followed on July 7. Each traveled for more than six months to get to Mars.

In early January, 2004, the first rover landed safely on Mars. Shouts of joy rang out at NASA.

Things went well for about two weeks. Then, suddenly, the rover stopped sending signals back to Earth. The team sent a message to the rover, asking it to send a simple beep. They waited and waited. No beep. Finally, they sent a different command. This time, the rover responded.



The Mars rovers landed in capsules surrounded by giant air balloons. The balloons acted like cushions.

But then the rover **interpreted** a command the wrong way. It suddenly shut down. Its batteries were running low. The team decided to let it rest and recharge its batteries.

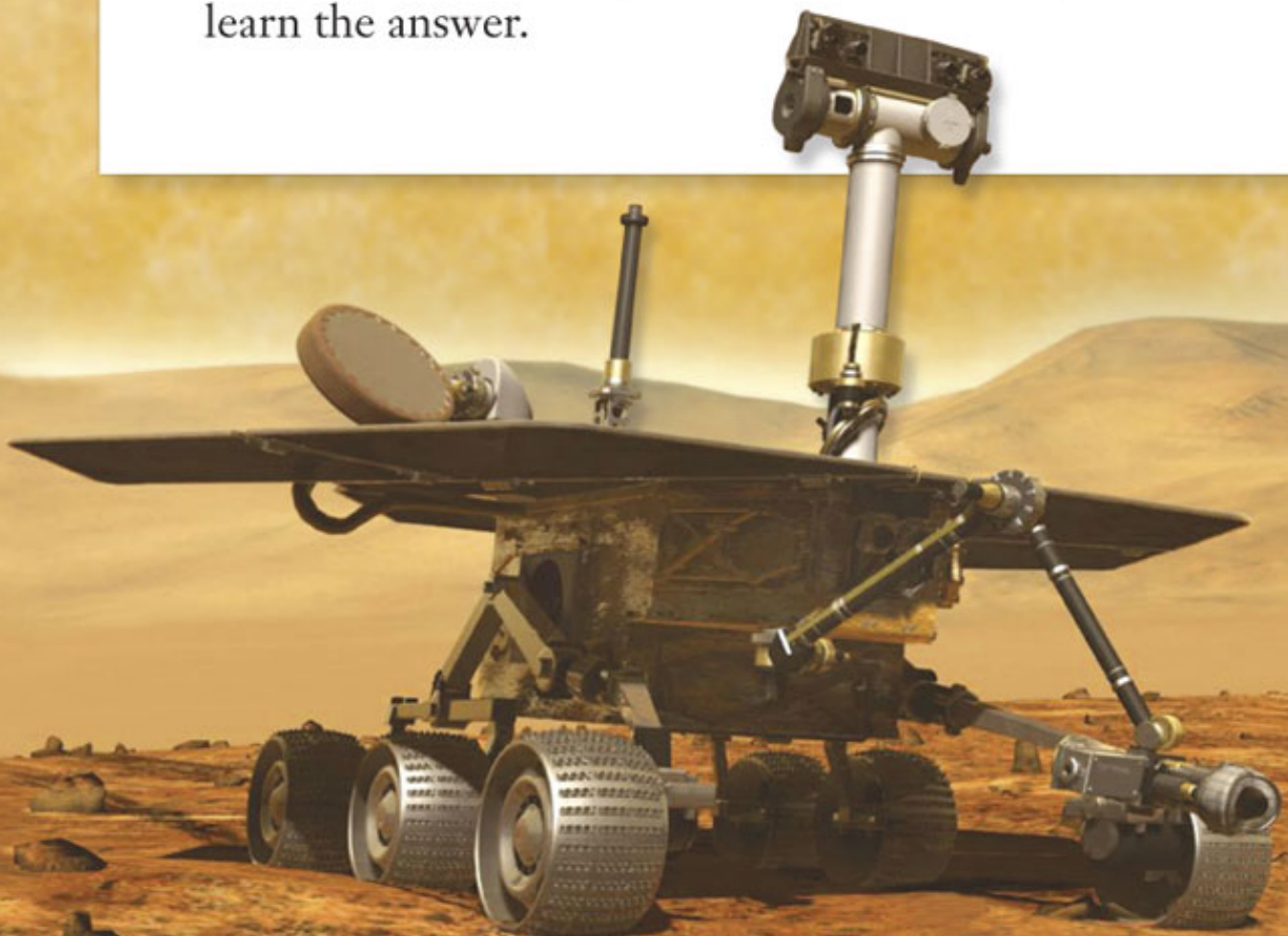
At the same time, the second rover landed on the other side of Mars. Thanks to good **navigation**, it landed in a great spot.

The second rover sent clear photographs back to Earth. It collected rocks and gathered facts about them. The rover learned that there was once water on Mars. Later, it discovered something even more exciting: Water may *still* exist on Mars!

Meanwhile, the first rover was back in action. Using its **sensors**, it climbed over rocks and did **maneuvers** on the other side of Mars. As it studied Mars's surface, it sent photos back to Earth.

The mission was finally running smoothly! The two rovers ended up exploring Mars for more than a year. That was much longer than the NASA scientists had expected.

Analysis of the rovers' findings has helped answer many questions. But one remains. If there is water on Mars, was there once life there, too? One day, with the help of new rovers, we may learn the answer.



Responding

Putting Words to Work

1. Complete the following sentence:
In my science project, I **interpreted** _____.
2. How might **sensors** help a **rover** climb a hill?
3. Why did **engineers** on Earth scramble to fix the first rover two weeks after it landed?
4. Why do you need to use **navigation** if you are sailing a boat?
5. **PARTNER ACTIVITY:** Think of a word you learned in the text. Explain its meaning to your partner and give an example.

Answer to Word Teaser

its **sensors**

Word Builder

The word **stereoscopic** comes from the root word “scope.” It means “for viewing.” This root is used in other words. Copy the chart below. Look up each word in a dictionary. Write its definition.

Word	Definition
microscope	
telescope	
radarscope	
stethoscope	

Write About It

Write a paragraph about a science career you might like to have. Try to use one of the words from your completed Word Builder chart in your paragraph.

Key Vocabulary

analysis
engineers
interpreted
maneuvers
monitoring
navigation
rover
sensors
stereoscopic

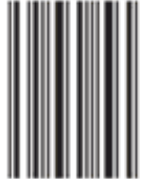
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